

## CLAIMS

1. A catalyst carrier characterized in that a surface of each particle of silicon-containing ceramic carrier is covered with a thin film of alumina.
2. A catalyst carrier according to claim 1, wherein the silicon-containing ceramic carrier is constructed with a carrier of silicide including a non-oxide ceramic such as silicon carbide or silicon nitride and an oxide ceramic such as sialon, mullite or cordierite.
3. A catalyst carrier according to claim 1, wherein the silicon-containing ceramic carrier is any of a porous body, fiber shaped body and pellet shaped body.
4. A catalyst carrier according to claim 1, wherein the silicon-containing ceramic carrier is formed by a honeycomb-like porous silicon carbide sintered body.
5. A catalyst carrier according to claim 1, wherein the silicon-containing ceramic carrier has a  $\text{SiO}_2$  layer on its surface, and an amount of  $\text{SiO}_2$  occupied in the carrier is 0.001-20 wt%.
6. A catalyst carrier according to claim 1, wherein the alumina thin film covering each particle surface of the ceramic carrier indicates a transplant structure of bristling with fine fibers having a diameter: 2-50 nm, a length: 20-300 nm and a ratio of total

length/diameter of 5-100 at a microscopic section and has a specific surface area of 50-300 m<sup>2</sup>/g.

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7. A catalyst carrier according to claim 1 or 6, wherein the alumina thin film is an amount of 0.1-15 wt% per the carrier as an alumina amount.

8. A method of producing a catalyst carrier, which comprises forming an alumina thin film on a surface of a silicon-containing ceramic carrier through the following steps (a)-(e).

(a) Solution immersing step: the carrier is immersed in a solution of aluminum containing metal compound.

(b) Drying step: the carrier is heated and dried.

(c) Calcining step: the carrier is heated and fired at a temperature of not lower than 300-500°C to form amorphous alumina thin film.

(d) Heat treating step: the carrier is immersed in a hot water of 100°C and dried.

(e) Finish firing step: it is fired at 500-1200°C.

9. A method of producing a catalyst carrier, which comprises forming an alumina thin film on a surface of a silicon-containing ceramic carrier through the following steps (a)-(f).

(a) Preliminary treating step: the silicon-containing ceramic carrier is heated to a temperature of 1000-1500°C

to form an oxide film of the silicide.

(b) Solution immersing step: the carrier is immersed in a solution of aluminum containing metal compound.

(c) Drying step: the carrier is heated and dried.

(d) Calcining step: the carrier is heated and fired at a temperature of not lower than 300-500°C to form amorphous alumina thin film.

(e) Heat treating step: the carrier is immersed in a hot water of 100°C and dried.

(f) Finish firing step: it is fired at 500-1200°C.

10. The method according to claim 8 or 9, wherein the silicon-containing ceramic carrier is constructed with a carrier of silicide including a non-oxide ceramic such as silicon carbide or silicon nitride and an oxide ceramic such as sialon, mullite or cordierite.

11. The method according to claim 8 or 9, wherein the silicon-containing ceramic carrier is any of a porous body, fiber shaped body and pellet shaped body.

12. The method according to claim 8 or 9, wherein the silicon-containing ceramic carrier is formed by a honeycomb-like porous silicon carbide sintered body.

13. The method according to claim 8 or 9, wherein the silicon-containing ceramic carrier has a SiO<sub>2</sub> layer on its surface, and an amount of SiO<sub>2</sub> occupied in the carrier

is 0.001-20 wt%.

add a<sup>3</sup>

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